respectfully submits that a *prima facie* case of obviousness has not been established for claims 1-7.

In order to establish a *prima facie* case of obviousness, three basic criteria must be met. First, the prior art reference (or references when combined) must teach or suggest all the claim elements. Furthermore, "[a]ll words in a claim must be considered in judging the patentability of that claim against the prior art." *See* M.P.E.P. § 2143.01 (8th Ed., Aug. 2001), quoting *In re Wilson*, 424 F.2d 1382, 1385, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

Second, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify a reference or to combine reference teachings. Third, there must be a reasonable expectation of success. *See* M.P.E.P. § 2143, pp. 2100-122 to 127. In this case, a *prima facie* case of obviousness has not been established because all three criteria have not been met.

Claim 1 is directed to a method for manufacturing an interlayer dielectric layer comprising a combination of elements including, *inter alia*, "spraying a silicon source material and a hydrogen peroxide (H_2O_2) in a gaseous state on [an] active matrix at a temperature ranging from approximately -20 °C to approximately 600 °C; and c) forming the interlayer dielectric layer on the active matrix by a condensation reaction of the silicon source material and the H_2O_2 without performing a post thermal treatment."

Kirchoff is directed to a method of forming a boron phosphorus silicate glass (BPSG) used as a layer in a semiconductor device. Kirchoff discloses that the BPSG layer is formed by reacting tetraethyorthosilicate (TEOS), flourotriethoxysilane (FTES),

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

and a gaseous oxygen source such as hydrogen peroxide, H_2O_2 in a low pressure chemical vapor deposition process. *See* Kirchoff, col. 5, lines 7-23. Kirchoff discloses that the reaction and deposition occurs at a temperature ranging from 650°C to 850°C. *Id.* at col. 6, lines 33-41. Additionally, Kirchoff discloses that an annealing process is performed after deposition at 750°C to 850°C. *Id.* at col. 6, lines 46-49. Thus, Kirchoff differs from the claimed invention in deposition temperature and non-performance of a thermal treatment.

The Examiner admitted that Kirchoff fails to teach the process temperature range and non-performance of a post thermal treatment. The Examiner, however, alleged that Lu teaches, in Fig. 1e, forming interconnections 130 and an interlayer dielectric layer without performing a post thermal treatment (Office Action, p. 2). The Examiner contended that it would have been obvious "to incorporate the interconnections and the process parameters of Lu into the Kirchoff semiconductor process because it should sufficiently fill the open pores at the xerogel surface and provide the adhesion layer," (Office Action, p. 2).

First, Applicant respectfully asserts that Lu does not teach or suggest at least forming a dielectric layer without a post thermal annealing. Lu discloses forming an interlevel dielectric layer that comprises three stacked layers: a xerogel layer 142, an hydrogen silsesquioxane (HSQ) layer 144, and a dielectric layer 146. *See* Lu, col. 4, line 65, to col. 5, line 25. Xerogel layer 142 is formed utilizing a series of spin-on coating and annealing processes. *Id.* at col. 3, line 64, to col. 4, line 64. HSG layer 144 is formed utilizing spin-on and annealing processes. *Id.* at col. 5, lines 6-7. Dielectric layer 146 is formed utilizing a plasma enhanced decomposition of TEOS with oxygen or

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

ozone. *Id.* at col. 5, lines 15-16. In short, Lu discloses performing multiple annealing processes in the formation of the interlevel dielectric layer. Thus, Lu does not teach or suggest at least forming a dielectric layer without a post thermal annealing.

Second, there is no motivation or suggestion to modify Kirchoff or to combine Lu with Kirchoff. The Examiner reasons that the teachings of Lu could be incorporated into Kirchoff "because it should sufficiently fill the open pores at the xerogel surface and provide the adhesion layer," (Office Action, p. 2). Kirchoff, however, does not teach forming a xerogel layer. Thus, one skilled in the art would not be motivated to modify Kirchoff to fill open pores and provide an adhesion layer.

Third, one skilled in the art would have no reasonable expectation of success in combining the teachings of Lu and Kirchoff. As stated above, Kirchoff discloses forming a BSPG layer in a low pressure chemical vapor deposition process. In contrast, Lu discloses forming a stacked dielectric layer by methods such as spin-on coating. Thus, one skilled in the art would have no reasonable expectation of success in using the process parameter of Lu in the method of Kirchoff because Lu and Kirchoff disclose entirely different deposition processes.

In view of the foregoing, Applicant submits that this claimed invention is neither anticipated nor rendered obvious in view of the prior art references cited against this application. Applicant requests reconsideration and reexamination of the application, and the timely allowance of the pending claims.

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 06-0916.

Respectfully submitted,

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER, L.L.P.

Dated: November 7, 2002

By: _____
Bryan S. Latham
Reg. No. 49,085

FINNEGAN
HENDERSON
FARABOW
GARRETT &
DUNNER LLP

1300 I Street, NW
Washington, DC 20005
202.408.4000
Fax 202.408.4400
www.finnegan.com